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[0014]

[Example]

Examples of the present invention are described base on Figs. 1 to 5. Fig. 1 is the perspective view simply showing the configuration of the present invention. An outer frame 2 is fixed to a press body 1 shown in Fig. 3, and supports two long rod-like lift rods 21 vertically to be in parallel to each other. Two long-cylinder-shaped lift guides 31 integrally formed with an intermediate frame 3 are slidably fit around the two lift rods 21. A female screw 35 is provided in the center of a horizontal girder 36 to which the two lift guides are connected. A screw-thread shaft 22 engaged with the female screw 35 is connected to the servo motor 23 for lift actuation provided at a lower portion of the outer frame 2. That is, the intermediate frame 3 is held with the lift guides 31 which slides on the lift rods 21, and carries out lift motion of the vertical direction (lift, down). The intermediate frame 3 is in a rectangular shape consisting of four sides and fixes to one side the two vertically extending lift guides 31. Between the one side and its faced side, two feed rods 32 are spanned in parallel. As shown in Fig. 2, the intermediate-frame 3b on the right-hand side of the press body 1 is built over the feed screw-thread shaft 33 pivotable between the two feed rods 32b. The feed screw-thread shaft 33 is connected with the servo motor 34 for feed actuation formed in the outside of intermediate-frame 3b. The servo motor 34 for feed actuation formed in the outside of intermediate-frame 3b projects from the aperture which cut the outer frame 2b. The feed screw-thread shaft 33 and the servo motor 34 are not attached in intermediate-frame 3a on the left-hand side of the press body 1. Inside the intermediate frame 3, the two feed rods 32 penetrate and support the clamp frame 5 slidably. As shown in Fig. 2, a feed female screw 52 is provided in a clamp frame 5b on the right-hand side of the press body 1. When the servo motor 34 for feed actuation provided at the right-hand side intermediate frame 3b of the press body 1 is rotated, the right-hand side clamp frame 5b carried out feed motion of a longitudinal direction (advance, return), and a beam 4 supported via a link and lever by the clamp frame 5b moves to propagate moving force to the left-hand side clamp frame 5a connected to the beam 4. The left-hand side clamp frame 5a moves sliding around the two feed rods 32a to perform feed motion. As shown in Fig. 1, the clamp frame 5 in the shape of block has in the upper portion thereof a clamp rod 53 and a clamp screw 54 passing through a slider 55 in parallel and the clamp frame 5 supports their ends. An end of the clamp screw 54 is connected to a servo motor 60 for clamp actuation. The slider 55 has clamp female screw 56 to screw the sliding bearing of the clamp rod 53 and the

clamp-screw shaft 54 and the lower part thereof is connected to a horizontal link 57 by a pin. On the lower side face facing the press body of the clamp frame 5 has supporting-point pins 64 are provided to mount the front lever 61 and the rear lever 62 rotatably in the vertical plane. A bifurcated upper lever 59 above the supporting-point pin 64 is pinned to the horizontal link 57 and the slanting link 58 open a right angle with the supporting-point pin 64 centered on. The lower end of the slanting link 58 is pin-connected with the rear lever 62 below the supporting-point pin 64. Each auxiliary lever 63 is connected swingably in the back and forth direction to the both ends of the lower face of the cramp frame 5 faced with the press body by a pin penetrating therethrough in the back and forth direction. The lower end of the auxiliary lever 63 is, together with the lower ends of the front lever 61 and the rear lever 62, connected swingably in the back and forth direction to the beams 4 by the pin. If the servo motor 60 for clamp actuation is rotated and the slider 55 is moved forward, for example, the horizontal link 57 moves the upper lever 59 forward, and beam 4a pinned to the lower end of the front lever 61 moves backward relative to the supporting-point pin 64. If the upper lever 59 moves forward, since the slanting link 58 is pulled up on the other hand, the slanting link 58 moves forward the beam 4b which is pinned to the lower end of the rear lever 62. That is, beams 4a and 4b operate to approach each other, which serve as clamp motion. Here, Fig. 4 shows the detail of clamp structure in the B-B cross section of Fig. 2, and Fig. 5 shows the side face of clamp structure taken along C-C of Fig.3 .

Fig. 1

60 servo motor (cramp)

5 cramp frame

3, 3a intermediate frame

4a, 4b beam

23 servo motor (lift)

34 servo motor (feed)

2 outer frame